BOOTSTRAP INSTITUTE

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Bootstrapping Organizations Into the 21st Century

TOGETHER WE CAN GET THERE!

Patricia Seybold
President, Patricia Seybold
Office Computing Group

interviewing

Dr. Douglas C. Engelbart
Director, Bootstrap Institute

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Doug Engelbart's
Odyssey

BASIC BOOTSTRAP CONCEPTS

Objective: **Pursue high-performance org**
Hypothesis #1: **Collab. Knowledge Work (CODIAK)**
Hypothesis #2: **Open Hyperdoc System (OHS)**
Hypothesis #3: **Whole-system Augmentation**
Hypothesis #4: **ABC's of Org Improvement**
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Hypothesis #6: **C Community**

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CODIAK:

Concurrent Development
Integration and Application of
Knowledge

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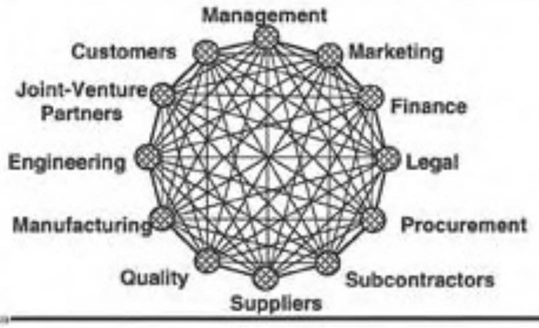
EXAMPLE: KNOWLEDGE DOMAINS OF A MANUFACTURING ORG



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THE CODIAK PROCESS -- COLLABORATIVE, DYNAMIC, CONTINUOUS

Dialog Records	External Intelligence	Knowledge Product
Memos	Articles, books	Proposals
Status reports	Reports, papers	Plans
Meeting minutes	Conf. proceedings	Budgets
Decision trails	Brochures	Legal contracts
Design rationale	Market surveys	Milestones
Change requests	Industry trends	Time lines
Document review	Competition	Design specs
Lessons learned	Suppliers info	Product descriptions
Bug reports	Customer info	Mfg plans
Field spt logs	New technologies	Test plans & results
Design reviews	New techniques	Field spt manuals

CODIAK: COncurrent Development, Integration, & Application of Knowledge.

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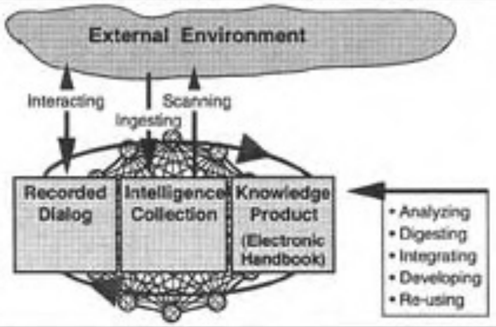
EVERY VIABLE ORGANIZATIONAL UNIT REQUIRES BASIC KNOWLEDGE PROCESSES



Recorded Dialog

Intelligence Collection

Knowledge Product (Electronic Handbook)

- Analyzing
- Digesting
- Integrating
- Developing
- Re-using

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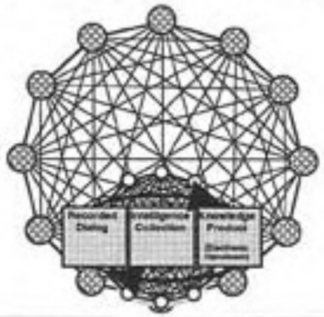
ORG UNIT'S *CODIAK* PROCESS NESTED WITHIN OTHER ORG EFFORTS



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Key Challenge:
Interoperability among CODIAK domains

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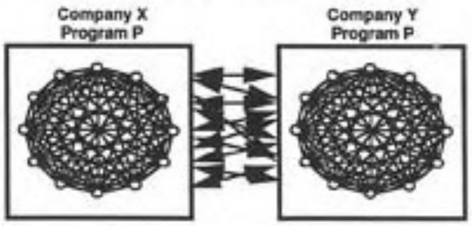
CLOSE COOPERATION BETWEEN LARGE ORGANIZATIONS PUTS NEW DEMANDS ON KNOWLEDGE-WORK INTERCHANGE

Two Aerospace Companies required to do "Program Teaming"



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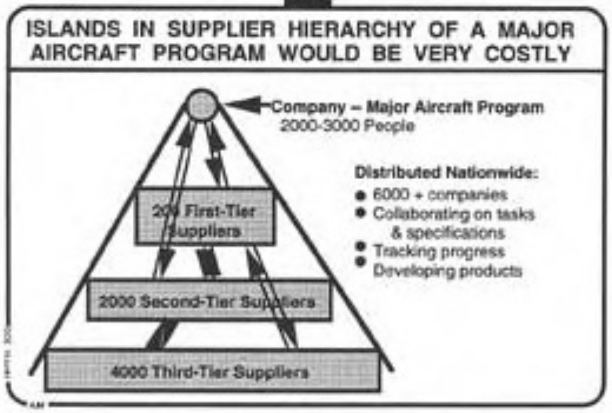

ISLANDS IN SUPPLIER HIERARCHY OF A MAJOR AIRCRAFT PROGRAM WOULD BE VERY COSTLY

Company – Major Aircraft Program
2000-3000 People

Distributed Nationwide:

- 6000 + companies
- Collaborating on tasks & specifications
- Tracking progress
- Developing products

200 First-Tier Suppliers

2000 Second-Tier Suppliers

4000 Third-Tier Suppliers

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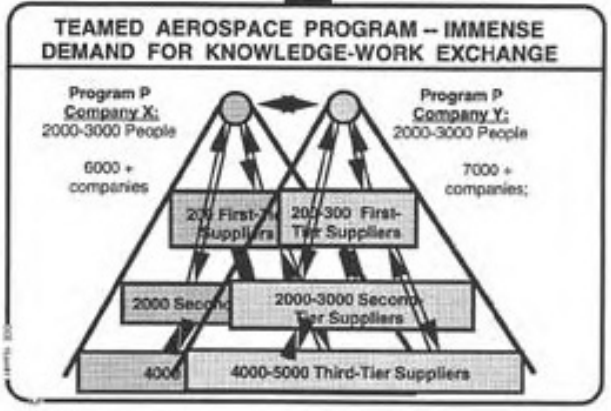


TEAMED AEROSPACE PROGRAM -- IMMENSE DEMAND FOR KNOWLEDGE-WORK EXCHANGE

Program P
Company X:
2000-3000 People

6000 +
companies

Program P
Company Y:
2000-3000 People

7000 +
companies;

200 First-Tier Suppliers

200-300 First-Tier Suppliers

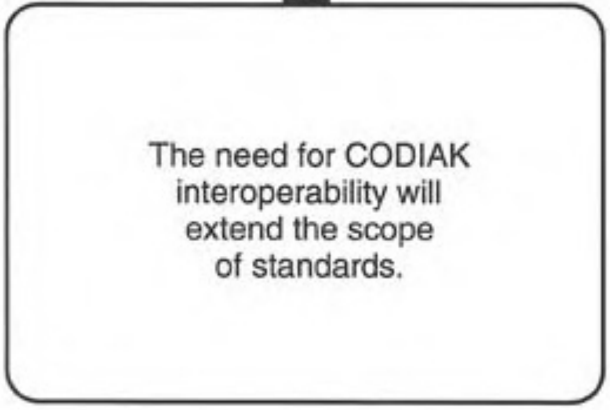
2000 Second

2000-3000 Second-Tier Suppliers

4000

4000-5000 Third-Tier Suppliers

15



The need for CODIAK interoperability will extend the scope of standards.

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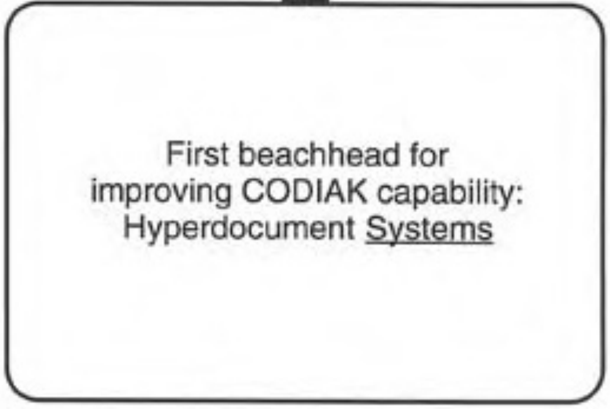

First beachhead for improving CODIAK capability: Hyperdocument Systems

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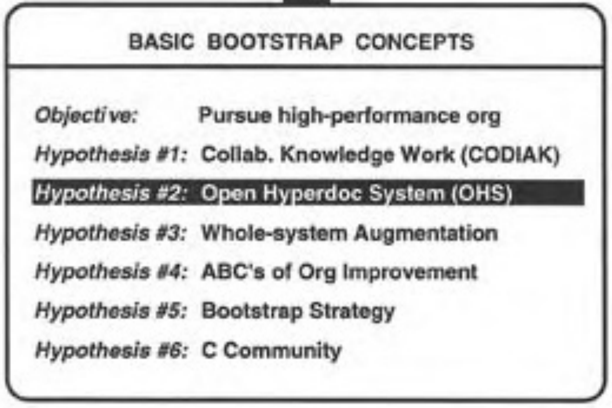

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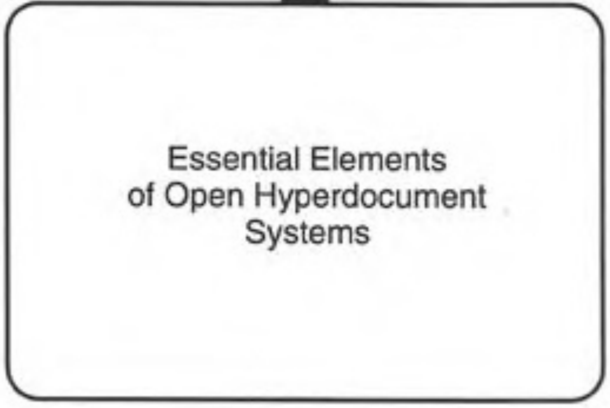

Essential Elements of Open Hyperdocument Systems

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Shared On-line Filing

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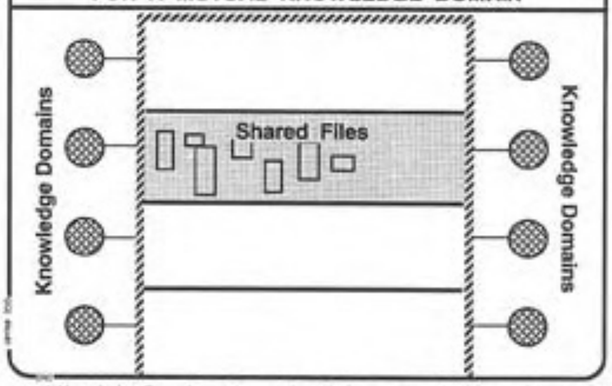
STAGE 1: **SUPPORTING THE CODIAK PROCESS FOR A MUTUAL KNOWLEDGE DOMAIN**



A Knowledge Domain can be any knowledge-work environment -- for an individual, project, department, functional area, whole org, or community

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Structuring, Linking and Viewing

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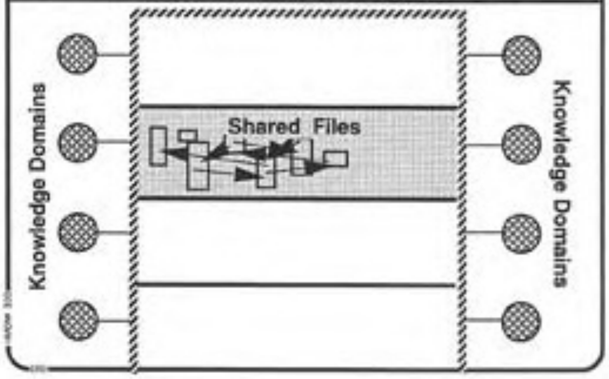
STAGE 2: **SUPPORTING THE CODIAK PROCESS FOR A MUTUAL KNOWLEDGE DOMAIN**



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[Engelbart is showing page 9 of "Authorship Provisions in Augment" -- see last page of this handout.]

FULL PAPER: https://bit.ly/3d2oaXp

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VIEWS

From "*Authorship Provisions In Augment*"

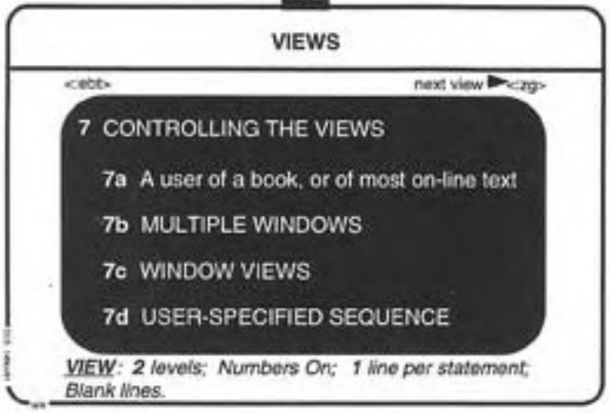
<ref. -- OAD,2250,7:cmsy> next view ▶<:abt>

7 CONTROLLING THE VIEWS

7a A user of a book, or of most on-line text systems, is constrained to viewing the text as though he had a window through which he sees a fixed, formatted document. But as described below, our worker can view a section of text in many ways, depending upon his need of the moment.

__VIEW__: All levels; Numbers On; All lines per statement; Blank lines.

25



VIEWS

<ebb> next view ▶<zg>

7 CONTROLLING THE VIEWS

7a A user of a book, or of most on-line text

7b MULTIPLE WINDOWS

7c WINDOW VIEWS

7d USER-SPECIFIED SEQUENCE

*__VIEW__: **2** levels; Numbers On; **1** line per statement; Blank lines.*

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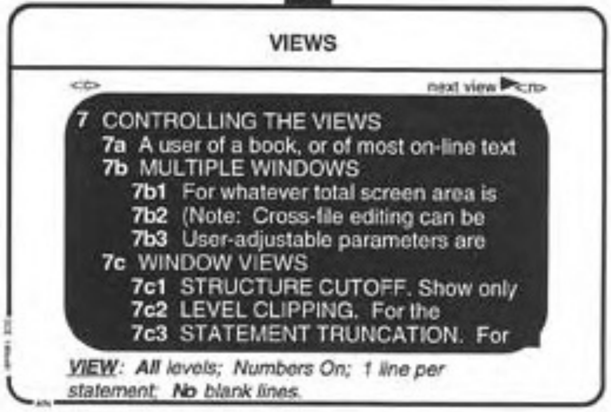

VIEWS

<c> next view ▶<cn>

7 CONTROLLING THE VIEWS
  7a A user of a book, or of most on-line text
  7b MULTIPLE WINDOWS
    7b1 For whatever total screen area is
    7b2 (Note: Cross-file editing can be
    7b3 User-adjustable parameters are
  7c WINDOW VIEWS
    7c1 STRUCTURE CUTOFF. Show only
    7c2 LEVEL CLIPPING. For the
    7c3 STATEMENT TRUNCATION. For

*__VIEW__: **All** levels; Numbers On; 1 line per statement; **No** blank lines.*

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Integrated Electronic Mail

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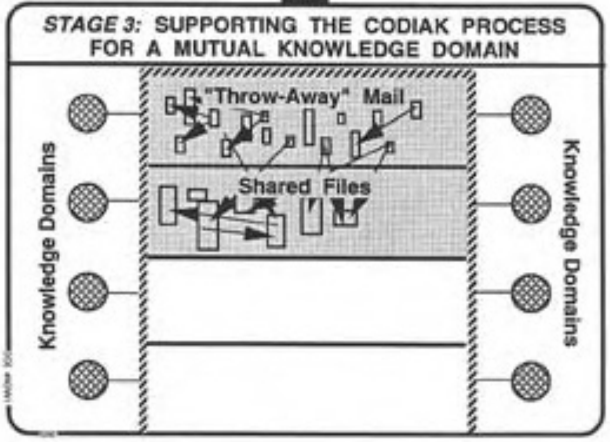

STAGE 3: **SUPPORTING THE CODIAK PROCESS FOR A MUTUAL KNOWLEDGE DOMAIN**

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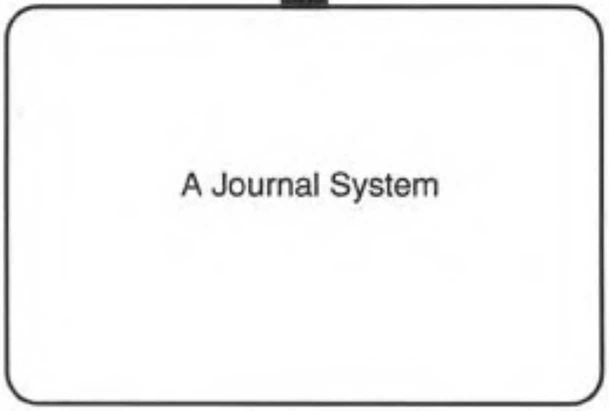

A Journal System

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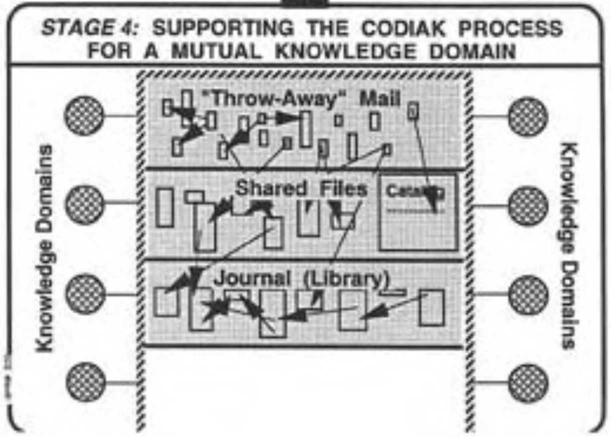

STAGE 4: **SUPPORTING THE CODIAK PROCESS FOR A MUTUAL KNOWLEDGE DOMAIN**

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Integrated External Document Management

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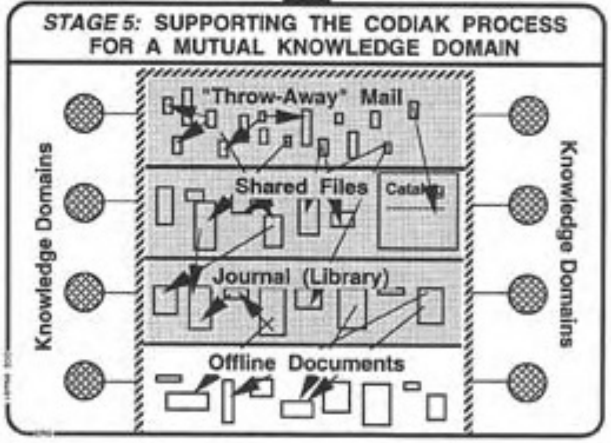

STAGE 5: SUPPORTING THE CODIAK PROCESS FOR A MUTUAL KNOWLEDGE DOMAIN

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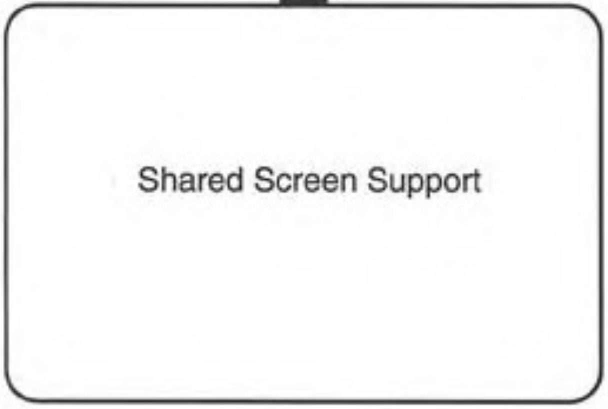

Shared Screen Support

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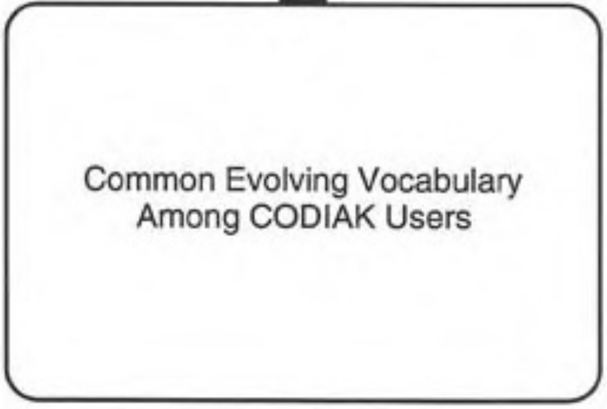

Common Evolving Vocabulary Among CODIAK Users

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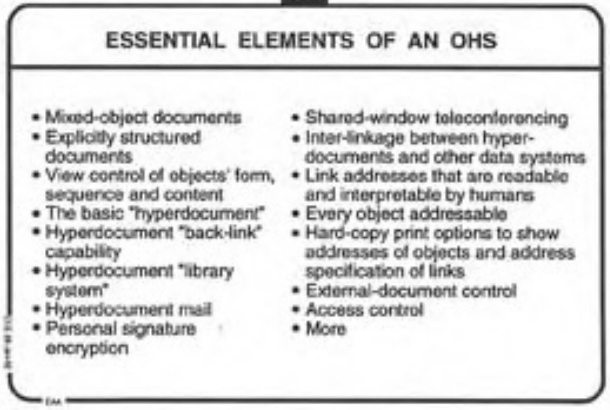

ESSENTIAL ELEMENTS OF AN OHS

- Mixed-object documents
- Explicitly structured documents
- View control of objects' form, sequence and content
- The basic "hyperdocument"
- Hyperdocument "back-link" capability
- Hyperdocument "library system"
- Hyperdocument mail
- Personal signature encryption
- Shared-window teleconferencing
- Inter-linkage between hyper-documents and other data systems
- Link addresses that are readable and interpretable by humans
- Every object addressable
- Hard-copy print options to show addresses of objects and address specification of links
- External-document control
- Access control
- More

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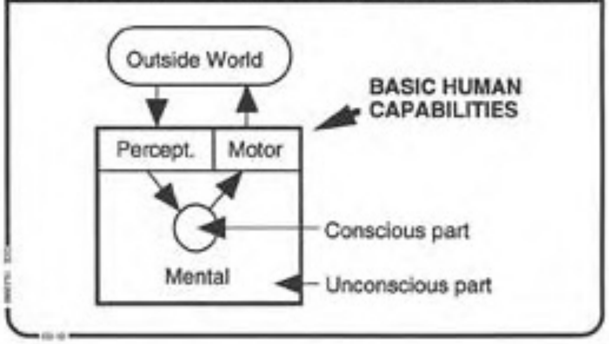
STARTING TO THINK ABOUT AUGMENTING THE KNOWLEDGE WORKER: BEGIN WITH BASICS



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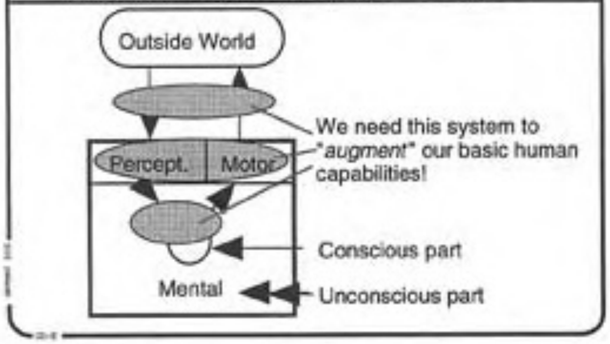
BUT OUR BARE MENTAL-MOTOR PERCEPTUAL MACHINERY CAN'T DO MUCH BY ITSELF --


Outside World
We need this system to "*augment*" our basic human capabilities!
Percept.
Motor
Conscious part
Mental
Unconscious part

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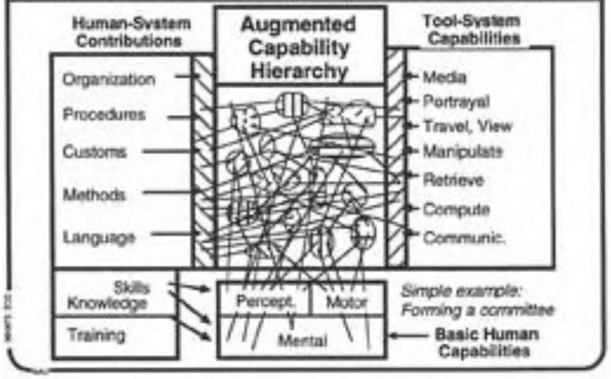
OUR CAPABILITIES GROW HIERARCHICALLY -- FOR BOTH INDIVIDUALS AND THEIR ORGANIZATIONS



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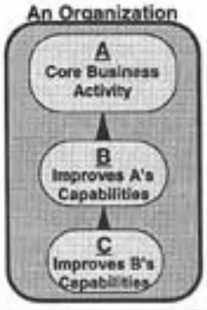
ABC's OF ORGANIZATIONAL IMPROVEMENT



A Activity:
Product R&D, mfg, marketing, sales, accounting, etc. Ex: aerospace -- producing planes; congress -- passing legislation; medicine -- AIDS research.

B Activity:
Improving the organization's ability to perform A work. Ex: introducing email or CAD systems; upgrading quality processes.

C Activity:
Improving the organization's ability to perform B work. Ex: introducing better ways to address needs, or run pilots.

How an organization explicitly improves its improvement capability.

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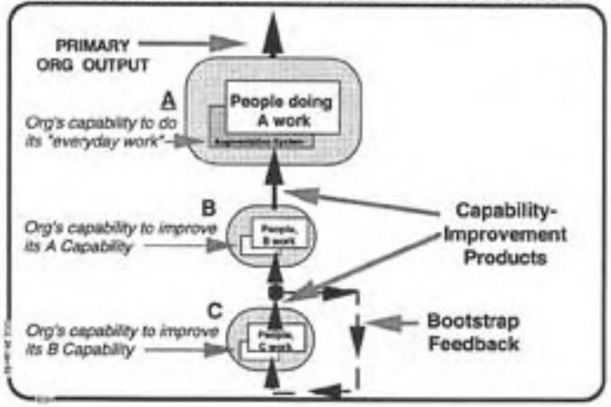
AN ORGANIZATION'S BOOTSTRAPPING PROCESS


PRIMARY
ORG OUTPUT
A
People doing
A work
Org's capability to do its "everyday work"
B
Org's capability to improve its A Capability
People, B work
C
Org's capability to improve its B Capability
People, C work
Capability-Improvement Products
Bootstrap Feedback

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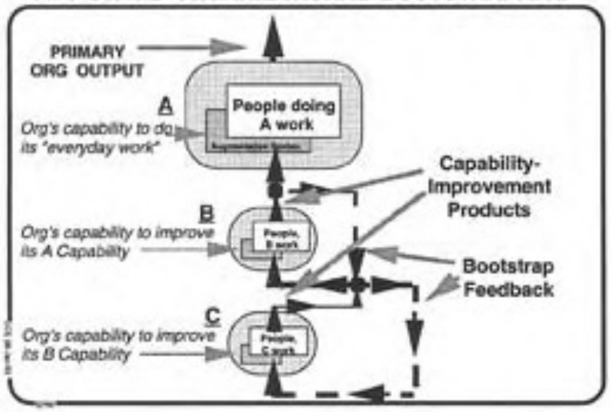
TWO-STAGE ORGANIZATIONAL BOOTSTRAPPING


PRIMARY
ORG OUTPUT
A
People doing
A work
Org's capability to do its "everyday work"
B
Org's capability to improve its A Capability
People, B work
C
Org's capability to improve its B Capability
People, C work
Capability-Improvement Products
Bootstrap Feedback

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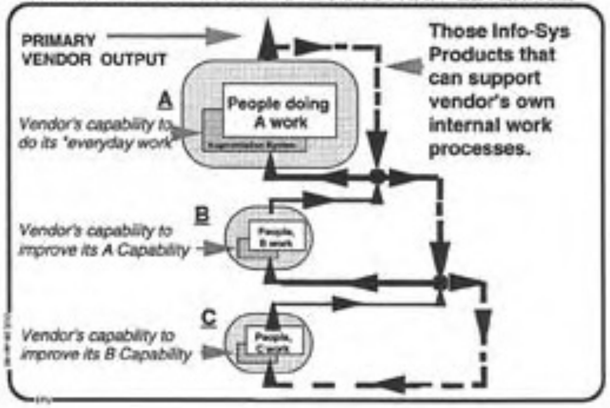
AN INFO-SYS VENDOR'S BOOTSTRAP LEVERAGE


PRIMARY
VENDOR OUTPUT
Those Info-Sys Products that can support vendor's own internal work processes.
A
People doing
A work
Vendor's capability to do its "everyday work"
B
Vendor's capability to improve its A Capability
People, B work
C
Vendor's capability to improve its B Capability
People, C work

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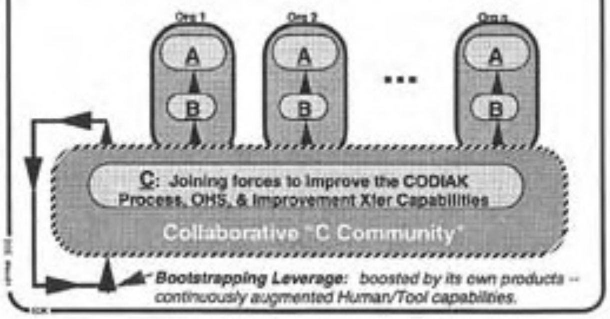
THE C COMMUNITY AS AN ADVANCED PILOT


Org 1
Org 2
Org n
A
B
...
C: Joining forces to improve the CODIAK Process, OHS, & Improvement Xfer Capabilities
Collaborative "C Community"

Bootstrapping Leverage: *boosted by its own products -- continuously augmented Human/Tool capabilities.*

Or, suppose he were working in another file in a different directory on Office-5 and wanted to reference items relative to that same "far off" statement with special ease: in some temporary place in that file he could install a statement named "Ref" (for example) containing the textual link, "(Program-Documentation, Sequence-Doc, Specifications)". He could then cite the above reference with the link, '(Ref.1 "Journal")'. This path description is: go to the statement in this file named "Ref", take the first link that you find there (traveling across intervening directories and files and statements), and beginning in the statement on the other end of that link, scan forward to the string "Journal". 6g4

This is only a cursory treatment, but should illustrate well enough what is meant by "a rich and flexible addressing vocabulary." As with other high-performance features in AUGMENT, a beginner is not forced to become involved in the larger vocabulary in order to do useful work (with productivity on at least a par with some other, restricted-vocabulary system). But an AUGMENT worker interested in higher performance can steadily pick up more of the optional vocabulary and skills in a smooth, upward-compatible progression. 6h

CONTROLLING THE VIEWS 7

A user of a book, or of most on-line text systems, is constrained to viewing the text as though he had a window through which he sees a fixed, formatted document. But as described below, our worker can view a section of text in many ways, depending upon his need of the moment. 7a

MULTIPLE WINDOWS 7b

For whatever total screen area is available to the worker, his general performance will be improved significantly if he can flexibly allocate that area into arbitrary-sized windows whose contents can be independently controlled. AUGMENT has long provided this basic capability, along with the provision that material from any accessible file may be shown in any window, and also that screen-select copying or moving can be done across the different windows. 7b1

(Note: Cross-file editing can be done at any time, between any two legally accessible files. If one or the other file's material or destination is not being displayed in any of the windows, one may always opt to employ a textual address expression instead of a <Select> within any editing command.) 7b2

User-adjustable parameters are used to control the view presented on the display. Adjusting one's view parameters is a constantly used AUGMENT feature that has solidly proved its value. To facilitate their quick and flexible

FULL PAPER: https://bit.ly/3d2oaXp